

Notice of Allowability

Application No.

10/537,677

Examiner

Rip A. Lee

Applicant(s)

SCHULTE ET AL.

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to June 25, 2007.
2. ☒ The allowed claim(s) is/are 1, 2, 5-7 and 9-12.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

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EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Page 3

Claim 1, line 8 replace "C₂-C₂₀-alkenyl" with "C₂-C₂₀ alkenyl"

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Claim 9, line 11 replace "C₂-C₂₀-alkenyl" with "C₂-C₂₀ alkenyl"

Page 6

Claim 10, line 16 replace "C₂-C₂₀-alkenyl" with "C₂-C₂₀ alkenyl"

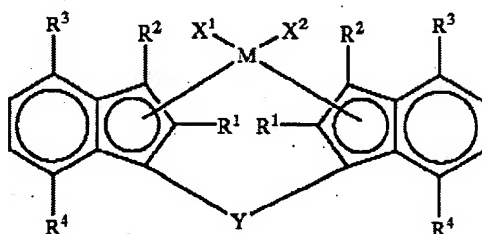
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Allowable Subject Matter

The following is an examiner's statement of reasons for allowance: Claims 1, 2, 5-7, and 9-12 are allowed over the closest references cited below.

The present invention is drawn to an organometallic compound of formula (I); see claims for details. Salient features of the compound include: R^2 is a (un)substituted C_6 - C_{40} aryl group, R^5 is a C_1 - C_{20} alkyl radical, a C_2 - C_{20} alkenyl radical, or an arylalkyl radical, and Z is a divalent group $CR^8R^9-CR^{10}R^{11}$.

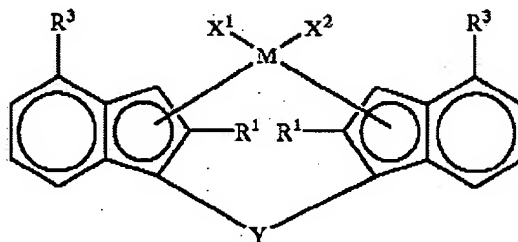
Tanaka *et al.* (U.S. 6,686,055) teaches a transition metal compound represented by formula (I) reproduced below. Substituent R^3 is a secondary or tertiary alkyl group of 3 to 20 carbon atoms or an aromatic group, R^4 is hydrogen or an alkyl group of 1-20 carbon atoms, and Y is a divalent hydrocarbon group of 1-20 carbon atoms or a divalent silicon group, *inter alia*.



Representative compounds of formula (I) include the series, $Me_2Si(2,7-Me_2-4-alkyl-indenyl)_2ZrCl_2$ where alkyl = Et, Bu, hexyl, cyclohexyl, phenylethyl ($-CH_2CH_2Ph$), *i*-Pr, and *t*-Bu, corresponding to R^1 , R^3 , and R^4 being alkyl groups in formula (I). Not even the compound in which alkyl = phenylethyl satisfies the indenyl substitution pattern recited in the instant claims (R^2 = (un)substituted C_6 - C_{40} aryl group). The reference does not provide examples of metallocenes having the combination of substituents, R^3 being an aromatic group and R^4 being an alkyl group of 1-20 carbon atoms. In this series of compound, the bridging group is Me_2Si rather than a divalent group of formula $CR^8R^9-CR^{10}R^{11}$.

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A subset of compounds in Tanaka *et al.* are those of general formula (Ia) represented by



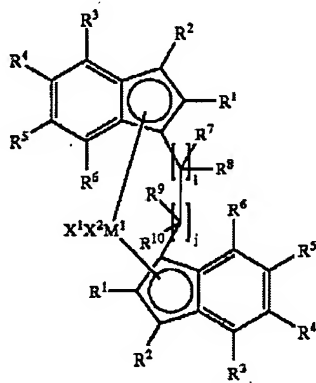
$\text{Me}_2\text{Si}(2\text{-methyl-4-Ar-indenyl})_2\text{ZrCl}_2$. Note that when R^3 is an aromatic group, substituent R^4 is hydrogen. The reference does not disclose specifically compounds containing a substituent at the 7-position of the indenyl ring when R^3 is aryl. In this series of compound, the bridging group is Me_2Si rather than a divalent group of formula $\text{CR}^8\text{R}^9\text{-CR}^{10}\text{R}^{11}$.

The reference does not disclose an analogous series of compounds containing a $\text{-CR}^8\text{R}^9\text{-CR}^{10}\text{R}^{11}$ - bridge, as required in the instant claims. Although use of such a bridging group is described in the generic description of compounds of formula (I), it is one of other possible bridging groups. In light of the teachings of Tanaka *et al.*, it is maintained that one of ordinary skill in the art would not have found it obvious to combine structural elements in order to arrive at compounds possessing all structural requisites set forth in the instant claims.

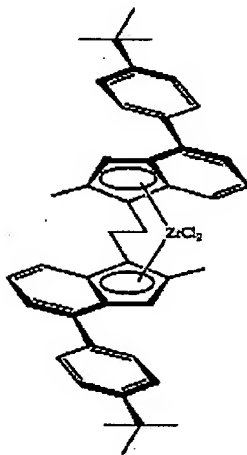
Bingel *et al.* (U.S. 6,492,539) discloses the metallocenes $\text{Me}_2\text{Si}(2,7\text{-Me}_2\text{-4-PhInd})_2\text{ZrCl}_2$ and $\text{Me}_2\text{Si}(2,7\text{-Me}_2\text{-4-naphthylInd})_2\text{ZrCl}_2$ (col. 53, lines 20 and 34). These two compounds are two of an extensive series of silylene bridged compounds, and there is no disclosure of corresponding alkylene bridged compounds. Absent any suggestion or motivation to do so, one having ordinary skill in the art would not have found it obvious to modify only these two compounds in order to arrive at the subject matter of the instant claims. The only series of alkylene bridged complexes immediately apparent in Bingel *et al.* contain the unexceptional 2-alkyl-4-aryl substitution pattern on the indenyl ligand and those containing a 4-aryl-6-alkyl substitution pattern. Therefore, the reference does not teach or make obvious compounds containing the combination of elements recited in the instant claims.

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Schulte *et al.* (U.S. 2003/0199703) teaches a series of metallocene having the general structure shown below. Substituent R^3 is a (un)substituted C_6 - C_{18} aryl group and R^1 , R^2 , R^4 , R^5 , and R^6 are identical or different and are each a hydrogen atom or a C_1 - C_{20} group.



Representative compounds of the invention are those containing an ethylene bridge, an aryl group at the 4-position of the indenyl ligand and an alkyl substituent at the 2-position, as shown below. The reference does not teach metallocenes having the minimum 4-aryl-7-alkyl-substitution pattern recited in the instant claims.



It is maintained that one of ordinary skill in the art would not have found it obvious to combine structural elements in order to arrive at compounds possessing all structural requisites set forth in the instant claims.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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September 5, 2007



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